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Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

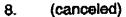
- 1. (cancelled)
- 2. (previously presented) A method as described in claim 14 wherein said publicly known manner for deriving an integer from said published information comprises applying a hashing function to said message M.
- (original) A method as described in claim 2 wherein said message M
 includes information IAV identifying said digital postage meter and operating parameters
 applicable to said digital postage meter.
- 4. (original) A method as described in claim 2 wherein said message M includes information IAV identifying said digital postage meter and operating parameters applicable to said digital postage meter.
- 5. (previously presented) A method as described in claim 14 wherein said group [P] is defined on an elliptic curve.
- 6. (previously presented) A method as described in claim 14 wherein said message M includes information tying said postage meter's public key Key_{DM}*P to said information IAV.
- 7. (currently amended) A article having an indicium imprinted thereon as evidence of attributes of said article, said indicium comprising:



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- a) a signature generated with a private key of a first party;
- b) a certificate;
- c) information specifying attributes of said article; wherein
- d) said private key of said first party is generated as a function of said certificate, said information, and a private key of a certifying authority, said function being chosen so that a party wishing to verify said indicium can determine a public key corresponding to said private key of said first party by operating on said certificate and said information with a corresponding public key of said certifying authority.



- 9. (canceled)
- 10. (previously presented) A method for certification by a certifying authority of a public key of a digital postage meter, said digital postage meter producing indicia signed with a corresponding private key of said digital postage meter, said certifying authority having a published public key and a corresponding private key, said method comprising the steps of:
- a) said certifying authority providing said meter with an integer, said integer being a first function of said private key of said authority;
- b) said meter computing a digital postage meter private key as a second function of said integer; and
 - c) said certifying authority publishing related information; wherein
- d) said first function. said second function and said published related information are chosen so that a party seeking to verify said indicia can compute said



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digital postage meter public key by operating on said published related information with said published public key of said authority.

- 11. (original) A method as described in claim 10 wherein said published related information includes information identifying said digital postage meter and operating parameters applicable to said digital postage meter.
- 12. (original) A method for certification by a certifying authority of a public key of a digital postage meter, said digital postage meter producing indicia signed with a corresponding private key of said digital postage meter, said certifying authority having a published public key and a corresponding private key, said method comprising the steps of:
- a) said certifying authority providing a user with an integer, said integer being a first function of said private key of said authority;
- b) said user computing a digital postage meter private key as a second function of said integer and downloading said postage meter private key to said digital postage meter; and
 - c) said certifying authority publishing related information; wherein
- d) said first function, said second function and said published related information are chosen so that a party seeking to verify said indicia can compute said digital postage meter public key by operating on said published related information with said published public key of said authority.
- 13. (original) A method as described in claim 12 wherein said published related information includes information identifying said digital postage meter and operating parameters applicable to said digital postage meter.



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- 14. (currently amended) A method for controlling, and distributing information between a digital postage meter and a certifying station operated by a certifying authority CA for publishing information, so that a public key Key_{DM}*P of said digital postage meter can be determined by a party seeking to verify indicia printed by said digital postage meter from said published information with assurance that said public key Key_{DM}*P has been certified by said certifying authority CA, said method comprising the steps of:
- a) defining and publishing a finite group [P] with a binary operation [+] and publishing a particular point P in said group;
- b) defining and publishing a binary operation K*p, where K is an integer and p is a point in said group, such that K*p is a point in said group computed by applying said operation [+] to K copies of said point p, and computation of K from knowledge of the definition of said group [P], said point p, and K*p is hard;
- c) controlling a certifying station to publish a certificate OMC_{DM} for said digital postage meter, wherein;

 $OMC_{DM} = (r_{DM} + r_{CA})^*P$; and wherein r_{DM} is a random integer generated by said digital postage meter and r_{CA} is a random integer generated by said certifying station;

- d) controlling said certifying station to publish a message M;
- e) controlling said certifying station to generate an integer l_{DM} , and send said integer to said digital postage meter, wherein;

 $I_{DM} = r_{CA} + H(M)Key_{CA}$; and wherein H(M) is an integer derived from said message M in accordance with a publicly known algorithm H and Key_{CA} is a private key of said certifying authority CA;

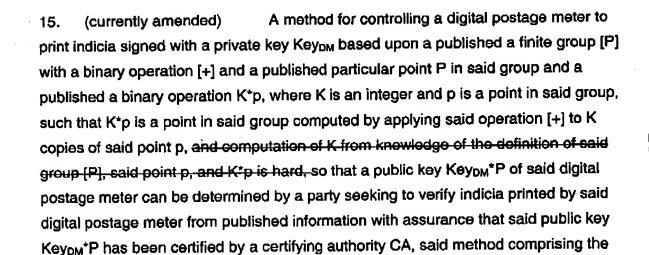
f) publishing a public key Key_{CA}*P for said certifying authority CA; and (10020882.1)Page 5 of 17



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- g) controlling said digital postage meter to compute a private key Key_{DM}, $Key_{DM} = r_{DM} + l_{DM} = r_{DM} + r_{CA} + H(M)Key_{CA}$; and
- h) controlling said digital postage meter to print an indicium and digitally sign said indicium with said key Key_{DM} ; whereby
- i) said verifying party can compute said user's public key Key_{DM}*P as $Key_{DM}*P = OMC_{DM} + H(M) \ Key_{CA}*P = \\ (r_{DM} + r_{CA})*P + H(M)Key_{CA}*P$ from knowledge of H, M, [P], said public key Key_{CA}*P, and OMC_{DM}.



- a) controlling said digital postage meter to generate a random number r_{DM} and send a point r_{DM} *P to a certifying station;
- b) controlling said digital postage meter to receive a certificate OMC_{DM} from a certifying station operated by said certifying authority CA, wherein;

$$OMC_{DM} = (r_{DM} + r_{CA})^*P$$
; and wherein



steps of:

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 r_{DM} is a random integer generated by said digital postage meter and r_{CA} is a random integer generated by said certifying station;

c) controlling said digital postage meter to receive an integer I_{DM} from said certifying station, wherein;

 $I_{DM} = r_{CA} + H(M)Key_{CA}$; and wherein

M is a message published by said certifying station and H(M) is an integer derived from said message M in accordance with a publicly known algorithm H and Keyca is a private key of said certifying authority CA;

d) controlling said digital postage meter to compute a private key Keydm,

$$Key_{DM} = r_{DM} + I_{DM} = r_{DM} + r_{CA} + H(M)Key_{CA}$$
; and

- e) controlling said digital postage meter to print an indicium and digitally sign said indicium with said key Key_{DM}; whereby
- f) said verifying party can compute said digital postage meter public key Кеу_{рм}*Р as

$$Key_{DM}^*P = OMC_{DM} + H(M) Key_{CA}^*P =$$

 $(r_{DM}+r_{CA})^*P+H(M)Key_{CA}^*P$

from knowledge of H, M, [P], said public key Keyca*P, and OMCDM.

16. (currently amended) A method for controlling a certifying station operated by a certifying authority CA to publish information relating to a digital postage meter for printing indicla signed with a private key Key_{DM} based upon a published a finite group [P] with a binary operation [+] and a published particular point P in said group and a published a binary operation K*P, where K is an integer and p is a point in said group, such that K*p is a point in said group computed by applying said operation [+] to K copies of said point p, and computation of K from knowledge of the definition of said group [P], said point p, and K*p is hard, so that a public key Key_{DM}*P of said digital postage meter can be determined by a party seeking to verify indicia printed by said



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digital postage meter from said published information with assurance that said public key Key_{DM}*P has been certified by a certifying authority CA, said method comprising the steps of:

- a) controlling said certifying station to receive a point r_{DM}^*P from said digital postage meter, where r_{DM} is a random number generated by said digital postage meter;
- b) controlling said certifying station to generate and send to said digital postage meter a certificate OMC_{DM}, wherein;

 $OMC_{DM} = (r_{DM} + r_{CA})^*P$; and wherein r_{CA} is a random integer generated by said certifying station;

c) controlling said certifying station to generate and send to said digital postage meter an integer I_{DM}, wherein;

 $I_{DM} = r_{CA} + H(M)Key_{CA}$; and wherein M is a message published by said certifying station and H(M) is an integer derived from said message M in accordance with a publicly known algorithm H and Key_{CA} is a private key of said certifying authority CA; whereby

d) said digital postage meter can compute said private key Key_{DM}, $Key_{DM} = r_{DM} + l_{DM} = r_{DM} + r_{CA} + H(M)Key_{CA}; and$ and digitally sign said indicium with said key Key_{DM}; and whereby

e) said verifying party can compute said digital postage meter public key Кеурм*Р as

$$Key_{DM}^*P = OMC_{DM} + H(M) Key_{CA}^*P = (r_{DM} + r_{CA})^*P + H(M)Key_{CA}^*P$$

from knowledge of H, M, [P], said public key Keyca*P, and CERTom.

17. (currently amended) A method for controlling, and distributing information among a user station, a digital postage meter and a certifying station operated by a



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certifying authority CA for publishing information, so that a public key Key₅₀*P of said digital postage meter can be determined by a party seeking to verify indicia printed by said digital postage meter from said published information with assurance that said public key Key₅₀*P has been certified by said certifying authority CA, said method comprising the steps of:

- a) defining and publishing a finite group [P] with a binary operation [+] and publishing a particular point P in said group;
- b) defining and publishing a binary operation K*p, where K is an integer and p is a point in said group, such that K*p is a point in said group computed by applying said operation [+] to K copies of said point p, and computation of K from knowledge of the definition of said group [P], said point p, and K*p is hard;
- c) controlling a certifying station to publish a certificate OMC₅₀ for said digital postage meter, wherein;

 $OMC_{50} = (r_{50} + r_{CA})^*P$; and wherein r_{50} is a random integer generated by said digital postage meter and r_{CA} is a random integer generated by said certifying station;

- d) controlling said certifying station to publish a message M;
- e) controlling said certifying station to generate an integer l_{50} , and send said integer to said user station, wherein;

 $I_{50} = r_{CA} + H(M)Key_{CA}$; and wherein H(M) is an integer derived from said message M in accordance with a publicly known algorithm H and Key_{CA} is a private key of said certifying authority CA;

- f) publishing a public key Keyca*P for said certifying authority CA; and
- g) controlling said user station to compute a private key Key50,

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$$Key_{50} = r_{50} + l_{50} = r_{50} + r_{CA} + H(M)Key_{CA}$$
; and

- h) transmitting said key Key50 to said postage meter; whereby
- i) said digital postage meter can print an indicium and digitally sign said indicium with said key Key₅₀; and whereby
 - i) said verifying party can compute said user's public key Key₅₀*P as

 Key₅₀*P = OMC₅₀ + H(M) Key_{CA}*P =

 (r₅₀+r_{CA})*P + H(M)Key_{CA}*P

from knowledge of H, M, [P], said public key Keyca*P, and OMC50.



- 18. (previously presented) A method as described in claim 17 wherein said publicly known manner for deriving an integer from said published information comprises applying a hashing function to said message M.
- 19. (previously presented) A method as described in claim 18 wherein said message M includes information IAV identifying said digital postage meter and operating parameters applicable to said digital postage meter.
- 20. (previously presented) A method as described in claim 17 wherein said message M includes information IAV identifying said digital postage meter and operating parameters applicable to said digital postage meter.
- 21. (previously presented) A method as described in claim 17 wherein said group [P] is defined on an elliptic curve.
- 22. (previously presented) A method as described in claim 17 wherein said message M includes information tying said postage meter's public key Key₅₀*P to said information IAV.

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23. (currently amended) A method for controlling a certifying station operated by a certifying authority CA to publish information relating to a digital postage meter for printing indicia signed with a private key Key₅₀ based upon a published a finite group [P] with a binary operation [+] and a published particular point P in said group and a published a binary operation K*p, where K is an integer and p is a point in said group, such that K*p is a point in said group computed by applying said operation [+] to K copies of said point p, and computation of K from knowledge of the definition of said group [P], said point p, and K*p is hard, so that a public key Key_{DM}*P of said digital postage meter can be determined by a party seeking to verify indicia printed by said digital postage meter from said published information with assurance that said public key Key_{DM}*P has been certified by a certifying authority CA, said method comprising the steps of:



- a) controlling said certifying station to receive a point r_{DM}^*P from a user station, where r_{DM} is a random number generated by said user station;
- b) controlling said certifying station to generate and send to said user station a certificate OMC₅₀, wherein;

OMC₅₀ = $(r_{50} + r_{CA})^+P$; and wherein r_{CA} is a random integer generated by said certifying station;

c) controlling said certifying station to generate and send to said user station an integer I_{50} , wherein;

 $I_{50} = r_{CA} + H(M)Key_{CA}$; and wherein

M is a message published by said certifying station and H(M) is an integer derived from said message M in accordance with a publicly known algorithm H and Keyca is a private key of said certifying authority CA; whereby

d) said user station can compute said private key Key_{DM},

 $Key_{50} = r_{50} + I_{50} = r_{50} + r_{CA} + H(M)Key_{CA}$

and transmit said key Key50 to said digital postage meter; whereby

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- e) said digital postage meter can digitally sign said indicium with said key Key50; and whereby
- f) said verifying party can compute said digital postage meter public key Key₅₀*P as

 $Key_{50}^*P = OMC_{50} + H(M) Key_{CA}^*P =$

(rDM+rca)*P+H(M)Keyca*P

from knowledge of H, M, [P], said public key Keyca*P, and CERTom.

- 24. (currently amended) A method for determining a public key Keyom*P of a digital postage meter with assurance that said key Keyom has been certified by a group of one or more certifying authorities CA, said method comprising the steps of:
- a) scanning an indicium produced by said postage meter to obtain a certificate OMC_{DM} for said postage meter, wherein;

 $OMC_{DM} = (r_{DM} + sum(r_{CAI}))^*P$; and wherein

 r_{DM} is a random integer known only to a party generating said key Key_{DM} and $sum(r_{CAI})$ is a sum of a plurality of random integers r_{CAI} , an ith one of said certifying stations generating an ith one of said random integers r_{CAI} ;

- b) scanning said indicium produced by said postage meter to obtain a message M said message M being published by a certifying station operated by one of said certifying authorities CA;
- c) computing a hash H(M) of said message M in accordance with a predetermined hashing function H;
- d) obtaining at least one public key _{CAI}*P corresponding to said one or more certifying authorities CA, an ith one of said authorities having an ith one of said keys Key_{CAI}; and



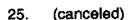
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- e) computing said user's public key Key_U*P as

 Key_U*P = CERT_U [+] H(M)sum_[+](KeyCAi*P)=

 (r_U + sum(r_{CAi}))*P [+] sum(H(M)Key_{CAi})*P; wherein
- f) a binary operation [+] is defined on a finite group [P] having a published particular point P; and
- g) K*p, is a second binary operation defined on said group [P], where K is an integer and p is a point in said group, such that K*p, is a point in said group computed by applying said operation [+] to K copies of said point p, and computation of K from knowledge of the definition of said group [P], said point p, and K*p is hard.



26. (canceled)

- 27. (previously amended) A method as described in claim 31 wherein M = (e,IAV), where IAV is an identity and attributes value for said postage meter.
- 28. (canceled)
- 29. (canceled)
- 30. (previously amended) A method as described in claim 32 wherein M = (e,IAV), where IAV is an identity and attributes value for said postage meter.
- 31. (previously presented) A method of digitally signing a postal indicium comprising the steps of:
 - a) generating a message m, said message m including indicia data;



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- b) generating a digital signature with message recovery for said message m; and
- c) incorporating said digital signature into said indicium; wherein
- d) said generating step further comprises the substeps of:
- d1) generating a random integer r_s , $r_s < n$, where n is the order of a group [P] defined on an elliptic curve;

d2) generating a integer K,

 $K = K(r_s P)$

where K(p) is a mapping of points in [P] onto the integers, and P is a particular published point in [P];

d3) generating e,

 $e = SKE_K(m)$

where SKEK is a symmetric key encryption algorithm using key K;

- d4) generating H(M), where H is a hashing function and M is a message which can be recovered from said indicium;
- d5) generating $s = Key_{DM}H(M) + r_{S}$, where Key_{DM} is the private key of a postage meter which produced said indicium; and
- d6) setting said digital signature for said message m equal to the pair (s,e).
- 32. (previously presented) A method of verifying a digital signature of a postal indicium comprising the steps of:
 - a) recovering a message m from a digital signature of a postal indicium; and



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- b) accepting said signature as valid if said message m is internally consistent;
 wherein
 - c) said recovering step further comprises the substeps of:
- c1) recovering a public key Key_{DM}*P for a postage meter which produced said indicium;
- c2) obtaining the signature (s,e) of said indicium, where s = $Key_{DM}H(M)$ +rs and e = $SKE_K(m)$, where SKE_K is a symetric key encryption algorithm using key K, m is indicia data, and M is a message recoverable from said indicium;
 - c3) obtaining M from said indicium;
 - c4) generating

s*P [-] H(M)Key_{DM}*P =
H(M)Key_{DM}*P [+]
$$r_S$$
*P [-] H(M)Key_{DM}*P =
 r_S *P

where [-] is the inverse of [+];

c5) generating

$$K = K(r_S^*P)$$

where K(p) is a mapping of points in [P] onto the integers, and P is a particular published point in [P];

c6) generating

$$m = SKE^{-1}K(e)$$

where SKE1K is the inverse of SKEK

